

REMARKS

Claims 1, 2, 4, 6-10 and 14-18 are pending in this application. Reconsideration of the rejections in view of the amendments and the following remarks is respectfully requested.

Rejection under 35 USC §112

**Claims 1, 2, 4, 6-10 and 14-18 are rejected under 35 USC §112, first paragraph, because these claims allegedly fail to satisfy the written description requirement.**

The Examiner alleged that "It is the examiner's position that this change fails to satisfy the written description requirement under 35 USC 112, first paragraph since there does not appear to be a written description for this phrase in the application as originally filed."

The law, however, is that the written description requirement does not require a literal written description for the claimed phrase. The MPEP 2163.05 III reads as follows:

III RANGE LIMITATIONS

With respect to changing numerical range limitations, the analysis must take into account which ranges one skilled in the art would consider inherently supported by the discussion in the original disclosure. In the decision in *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976), the ranges described in **the original specification included a range of "25%- 60%"** and specific examples of "36%" and "50%." A corresponding new claim limitation to "at least 35%" did not meet the description requirement because the phrase "at least" had no upper limit and caused the claim to read literally on embodiments outside the "25% to 60%" range, however **a limitation to "between 35% and 60%" did meet the description requirement.**

**The Patent Act and the case law require only sufficient description to show one of skill in the art that the inventor possessed the claimed invention at the time of filing.** *Union Oil of Cal. v. Atlantic Richfield Co.*, 208 F.3d 989, 997, 54 USPQ2d 1227, 1232-33 (Fed. Cir. 2000).

Thus, the claimed recitation "5 through 10 wt% of polymeric monomer including a polar group" is sufficiently supported by the examples of Table 1, thus, it does meet the description requirement according to the law.

**Rejection under 35 USC §103(a)**

Claims 1, 2, 4, 6-10, and 14-18 were rejected under 35 U.S.C. §103(a) as being obvious over Nguyen et al (U.S. Patent No. 6,248,805) in view of Patel et al (U.S. Patent No. 5,977,210) and Fujisawa et al (U.S. Patent No. 5,997,136).

Independent claims 1, 14, 16 and 17 have been amended to recite "(a) 40 through 80 wt% of styrene; (b) 10 through 80 wt% of alkyl acrylate or alkyl methacrylate; and (c) 5 through 10 wt% of polymeric monomer including a polar group, the polymeric monomer including a polar group selected from the group consisting of acrylic acid, methacrylic acid, 2-hydroxypropyl-N, N, N-trimethylammonium chloride acrylate, vinylpyridine and N, N-diallylmethylammonium chloride." The amended recitation is supported in the specification at page 11, line 19 to page 12, line 2, page 12, Table 1, page 15, lines 6-15. These recitations are necessary to achieve "rapid drying" and "fixation" as explained in Applicants' previous response.

In Nguyen et al, the core/shell polymer contains "hydrophobic monomer such as styrene" less than 30 wt % ( $y < 30$  wt %). Thus, Nguyen et al does not teach or suggest, among other things, "40 through 80 wt% of styrene." Patel et al and Fujisawa et al do not teach or suggest "40 through 80 wt% of styrene," either. The "rapid drying" and "fixation" cannot be achieved in the prior art, as explained in the present specification at page 7, line 3 to page 8, line 8 and at page 11, line 19 to page 12, line 2.

For at least these reasons, claims 1, 4, 14, 16 and 17 patentably distinguish over the cited references. Claims 2, 4 and 6-10 depend upon claim 1, and patentably distinguish for at least the above reasons. Claim 15 depends upon claim 14, and is patentable for at least the same reasons. Claim 18 depends upon claim 17, and is patentable for at least the same reasons.

It is submitted that nothing in the cited references, taken either alone or in combination, teaches or suggests all the features recited in each claim of the present invention. Thus all pending claims are in condition for allowance. Reconsideration of the rejections, withdrawal of the rejections and an early issue of a Notice of Allowance are earnestly solicited.

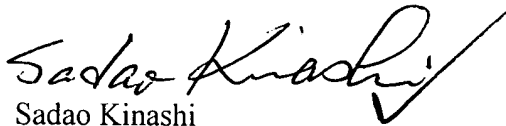
If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicant's undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

Serial No. 09/492,373

In the event that this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. The fees for such an extension or any other fees which may be due with respect to this paper, may be charged to Deposit Account No. 01-2340.

Respectfully submitted,

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PATENT TRADEMARK OFFICE

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**IN THE CLAIMS:**

Please amend the claims as follows:

1. (Currently Amended): Ink comprising:

a primary particle of a copolymer that has a glass transition point less than or equal to 45 °C, a softening point measured by a flow tester ranging from 40 through 150°C and a volume average particle diameter ranging from 0.01 through 2  $\mu$ m obtained from a radical polymeric monomer composition consisting essentially of:

(a) ~~20 through 99~~ 40 through 80 wt% of styrene;

(b) 10 through 80 wt% of alkyl acrylate or alkyl methacrylate; and

(c) 5 through 10 wt% of polymeric monomer including a polar group, the polymeric monomer including a polar group selected from the group consisting of acrylic acid, methacrylic acid, 2-hydroxypropyl-N, N, N-trimethylammonium chloride acrylate, vinylpyridine and N, N-diallylmethylammonium chloride;

a colorant; and

a solvent that is liquid at room temperature.

2. (Original): The ink according to claim 1, wherein said primary particle of a copolymer is prepared by a polymerization process selected from the group consisting of an emulsion polymerization, a micro emulsion polymerization and a soap-free polymerization.

3. (Canceled)

4. (Previously Amended): The ink according to claim 1, wherein said copolymer has a glass transition point ranging from -30 through 45 °C.

5. (Canceled)

6. (Original): The ink according to claim 1, wherein said colorant comprises one selected from the group consisting of a pigment and a dye, and said colorant is dissolved or dispersed in said primary particle of a copolymer.

7. (Original): The ink according to claim 1, wherein said colorant comprises one selected from the group consisting of a pigment and a dye, and said colorant is absorbed on or coats a surface of said copolymer.

8. (Original): The ink according to claim 1, wherein said colorant comprises one selected from the group consisting of a pigment and a dye, and said colorant is dissolved or dispersed in said solvent.

9. (Original): The ink according to claim 1, wherein said copolymer is included at 1 through 50 wt%.

10. (Original): The ink according to claim 1, wherein said colorant is included at 0.1 through 20 wt%.

11-13. (Canceled)

14. (Currently Amended): Ink comprising:

a copolymer particle that has a glass transition point less than or equal to 45 °C, a softening point measured by a flow tester ranging from 40 through 150 °C and a volume average particle diameter ranging from 0.01 through 2  $\mu$ m obtained from a radical polymeric monomer composition consisting essentially of:

(a) ~~20 through 99~~ 40 through 80 wt% of styrene;

(b) 10 through 80 wt% of alkyl acrylate or alkyl methacrylate; and

(c) 5 through 10 wt% of polymeric monomer including a polar group, the polymeric monomer including a polar group selected from the group consisting of acrylic acid, methacrylic acid, 2-hydroxypropyl-N, N, N-trimethylammonium chloride acrylate, vinylpyridine and N, N-diallylmethylammonium chloride;

a colorant; and

a solvent that is liquid at room temperature.

15. (Original): The ink according to claim 14, further comprising a surfactant covering a surface of said copolymer particle.

1           16. (Currently Amended): An ink cartridge including a case and ink which is stored n said case  
2 and comprises:

3           a copolymer particle that has a glass transition point less than or equal to 45 °C, a softening point  
4 measured by a flow tester ranging from 40 through 150 °C and a volume average particle diameter ranging  
5 from 0.01 through 2  $\mu$ m obtained from a radical polymeric monomer composition consisting essentially of:

6           (a) ~~20 through 99~~ 40 through 80 wt% of styrene; and

7           (b) 10 through 80 wt% of alkyl acrylate or alkyl methacrylate; and

8           (c) 5 through 10 wt% of polymeric monomer including a polar group, the polymeric  
9 monomer including a polar group selected from the group consisting of acrylic acid, methacrylic acid, 2-  
10 hydroxypropyl-N, N, N-trimethylammonium chloride acrylate, vinylpyridine and N, N-  
11 diallylmethylammonium chloride;

12           a colorant; and

13           a solvent that is liquid at room temperature.

1           17. (Currently Amended): A recording device including a head and an ink cartridge supplying ink  
2 to said head, wherein said ink comprises:

3           a copolymer particle that has a glass transition point less than or equal to 45 °C, a softening point  
4 measured by a flow tester ranging from 40 through 150 °C and a volume average particle diameter ranging  
5 from 0.01 through 2  $\mu$ m obtained from a radical polymeric monomer composition consisting essentially of:

6           (a) ~~20 through 99~~ 40 through 80 wt% of styrene; and



7 (b) 10 through 80 wt% of alkyl acrylate or alkyl methacrylate; and

8 (c) 5 through 10 wt% of polymeric monomer including a polar group, the polymeric

9 monomer including a polar group selected from the group consisting of acrylic acid, methacrylic acid, 2-

10 hydroxypropyl-N, N, N-trimethylammonium chloride acrylate, vinylpyridine and N, N-

11 diallylmethylammonium chloride;

12 a colorant; and

13 a solvent that is liquid at room temperature.

18. (Previously Amended): A recording device according to claim 17, wherein said head is an inkjet head using a piezoelectric element.